Medical Technology and Costs of THE MEDICARE PROGRAM

Summary

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Foreword

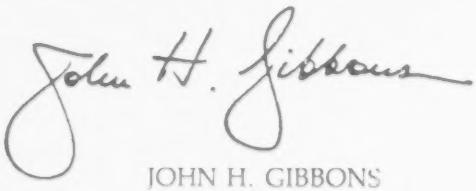
U.S. health care costs have escalated rapidly over the past 15 years, and medical technology is a primary cause of the increase. A major focus of Federal policymakers' concerns about rising health care expenditures is the Medicare program, which pays for hospital and other acute-care health services for over 30 million elderly and disabled Americans.

To aid in congressional efforts to contain Medicare costs, the House Committee on Energy and Commerce and its Subcommittee on Health and the Environment and the Senate Committee on Finance, Subcommittee on Health asked OTA to assess a broad range of mechanisms to limit or reduce Medicare costs related to medical technology without sacrificing the quality of health care delivered.

The same committees also requested a study of the proposed use of Diagnosis Related Groups (DRGs) as Medicare's inpatient hospital payment mechanism and several case studies of particular interest to the Medicare program. These are published as separate volumes. This report focuses on the policy mechanisms to limit or reduce Medicare costs related to medical technology but draws from the study of DRGs and the case studies.

The report explores the dual relationship between medical technology and Medicare policies. It reviews specific Medicare policies that have had an influence on the adoption and use of medical technology and also analyzes the contribution of medical technologies to increases in Medicare costs. The report identifies several possible changes in Medicare coverage, payment, and other policies that could be used to influence medical technology adoption and use and to restrain Medicare program costs.

This study was ably guided by an advisory panel, chaired by Stuart H. Altman. In addition, a large number of persons in the Federal and State Governments and in the health services research field were consulted. We are grateful for their many contributions. As with all OTA reports, however, the content is the responsibility of OTA and does not constitute consensus or endorsement by the advisory panel or by the Technology Assessment Board. Key OTA staff involved in the assessment were Anne K. Burns, Cynthia P. King, Lawrence H. Miike, Gloria Ruby, and Judith L. Wagner.



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Blue Cross of Greater Philadelphia

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Department of Environment and Community and Family Medicine
Rutgers University

Paul Torrens
UCLA School of Public Health

Keith Weikel
Group Vice President
AMI
McLean, Va.

OTA Project Staff—Medical Technology and Costs of the Medicare Program

H. David Banta* and Roger C. Herdman,** *Assistant Director, OTA Health and Life Sciences Division*

Clyde J. Behney, *Health Program Manager*

Anne Kesselman Burns, *Project Director*

Cynthia P. King, *Analyst*
Lawrence H. Miike, *Senior Associate*
Gloria Ruby, *Analyst*
Pamela J. Simerly, *Research Assistant*
Judith L. Wagner, *Senior Analyst*

Kerry Britten Kemp, *Health and Life Sciences Division Editor*

Virginia Cwalina, *Administrative Assistant*
Beckie I. Erickson, *Secretary****
Brenda Miller, *Word Processor/PC Specialist*
Jennifer Nelson, *Secretary*****
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Joanne Finley, Maryland State Department of Health
Irwin Litt
Matthew Menkin
Leonard Saxe, Boston University
William Stason, Harvard University
Paul Wortman, University of Michigan

*Until August 1983.
**Since December 1983.
***Since January 1984.
****Until January 1984.

Medical Technology and Costs of the Medicare Program

U.S. health care costs have escalated rapidly over the past 15 years, and medical technology[1] is a primary cause of the increase. Furthermore, now that controlling health care expenditures has become an issue of national prominence in the public and private sectors, increasing attention is being paid to the financial impact of the use of new and existing medical technologies.

A major focus of Federal policymakers' concerns about rising health care expenditures is the Medicare program, which provides payment for hospital and other acute care health services for over 30 million elderly and disabled Americans. Since 1974, Medicare expenditures have been increasing at an average annual rate of 19 percent. Largely because of the Medicare program, the Federal share of national health expenditures has risen continuously since the program's inception in 1966. Medicare expenditures, which represented 48.9 percent of total Federal expenditures for personal health care[2] in 1970, represented 60.8 percent in 1982. In 1982, Federal expenditures under Medicare totaled $52.2 billion. Of that amount, $36.3 billion went for hospital care, and $11.4 billion went for physicians' services. Program expenditures in fiscal year 1984 are expected to reach $66.5 billion.

Medicare's beneficiaries, elderly and disabled Americans, are on average sicker than the general population. Furthermore, they are disproportionately high users of health care services in general and medical technology in particular. Every class of medical technology—with the exception of obstetrical, pediatric, and possibly preventive interventions—is on average applied more often to Medicare beneficiaries than to the population as a whole. In 1980, those over the age of 65 accounted for 11.2 percent of the population but 31.4 percent of health care costs. Both percentages are expected to rise significantly in the future because of the aging of the U.S. population.

To aid in congressional efforts to contain Medicare costs, the House Committee on Energy and Commerce and its Subcommittee on Health and the Environment and the Senate Committee on Finance, Subcommittee on Health asked OTA to assess a broad range of mechanisms to limit or reduce Medicare costs related to medical technology.

OTA's assessment explores **the dual relationship between medical technology and the Medicare program: Medicare policies affect the adoption**

[1]OTA defines medical technology as the drugs, devices, and surgical and medical procedures used in medical care, and the organizational and supportive systems within which they are provided.

[2]Personal health care expenditures are national health care expenditures minus administrative costs.

Photo credit: E. I. du Pont de Nemours & Co.

In 1982, Medicare had over 30 million elderly and disabled beneficiaries

and use of medical technologies, and the patterns and levels of use of medical technologies significantly affect Medicare costs. It reviews specific Medicare policies—eligibility, benefits, payment, and beneficiary cost-sharing policies—that have had an influence on the adoption and use of medical technology. It also examines the contribution of medical technologies to increases in Medicare costs.

OTA identified several possible changes in Medicare policies that could be used to influence medical technology adoption and use and to restrain Medicare program costs. These mechanisms generally fall into the following categories:

- changes in Medicare's coverage policy for specific technologies;
- changes in the methods of Medicare payment to hospitals;
- changes in the methods of Medicare payment to physicians; and
- approaches to changing the incentives for the adoption and use of technology that do not directly involve, but may be related to, the Medicare payment mechanism (e.g., encouraging the development of alternative cost-effective health care delivery systems).

Because of the vast number of medical technologies being developed or used and the decentralized administration of the Medicare program, technology-specific approaches are likely to be of limited value in containing Medicare costs.[3] For that reason, broader approaches, many of which in-

[3]Technology-specific approaches may be particularly valuable, however, in enhancing the adoption of socially valued technologies that may be cost-raising.

volve the use of hospital or physician payment mechanisms to change providers' or consumers' financial incentives to use medical technology, are generally considered the major means by which the cost-containment objectives of the Medicare program might be achieved. The change in Medicare's inpatient hospital payment system—from retrospective, cost-based payment to prospective, per case payment based on Diagnosis Related Groups (DRGs) as mandated by the Social Security Amendments of 1983 (Public Law 98-21)—provides a striking example of such an approach.

Other broad approaches do not involve the payment mechanism directly but are usually considered in conjunction with payment mechanism changes to alter the incentives for technology use. These include stimulating competition among providers of health care by encouraging the development of alternative sites or organizations (e.g., health maintenance organizations) of health care delivery. They also include administrative changes in the Medicare program (e.g., merging Parts A and B of Medicare) for the purpose of changing incentives for technology adoption and use.

There are two additional broad approaches to containing Medicare costs, but they are not discussed extensively in this report. The first approach is simply to limit the amount of money available for Medicare. Applying such a financial squeeze would give providers and patients strong incentives to adopt and use technologies efficiently. However, applying such a limitation to the Medicare program alone, while saving Federal dollars, would likely either shift costs to the private sector or result in Medicare beneficiaries' reduced access to certain technologies. The second approach is to use the conditions of participation for Medicare providers (i.e., requirements providers must meet in order to be eligible to receive payment from Medicare) to change the incentives for technology use.

Several points should be kept in mind while reading this report. These points are not presented in order of importance, primarily because the issues involved are intertwined.

First, the impact of medical technologies on Medicare costs, or health care costs in general, should not be assessed in isolation from the effect that such technologies have on quality of care. The impact of cost-containing measures on both quality and access is one of the most difficult policy issues to be faced, because the Medicare program was instituted to increase elderly persons' access to acute care services. In order to control Medicare costs in the long run, some restrictions on quality or access are likely to be necessary. Unfortunately, the rapid rate of growth in health or Medicare expenditures cannot be stemmed simply by eliminating technologies that do not provide any benefit, because most technologies do provide some benefit, however small or costly the benefit may be.

Nevertheless, **there is substantial evidence to suggest that inappropriate use of medical technology is common and raises Medicare and health system costs without improving quality of care.** Many surgical procedures seem to be overused in the United States compared to other countries. Laboratory examinations and other diagnostic tests are used at high rates and at

times when not indicated by the suspected conditions. Lengths of stay in the hospital are higher in many cases than can be justified by medical evidence of benefit. Thus, one way to reduce Medicare costs is to encourage the appropriate use of new and existing medical technologies.

Second, there are interactions between Medicare and the rest of the U.S. health care system. Because of its size and scope, and because other third-party payers often follow Medicare's example, Medicare's policies and procedures affect all aspects of health care delivery, including financing, administration, organization, and personnel. Furthermore, the program affects the content and costs of health care by its influence on the development, adoption, and use of medical technology.

Nevertheless, it is important to keep in mind that **the Medicare program is only one of many public and private institutions that influence the development and diffusion of medical technology.** Other important influences are the Food and Drug Administration, the National Institutes of Health, manufacturers of drugs and medical devices, hospitals, private health insurers, and professional medical societies. The long-term costs of the Medicare program are linked with those of the overall health care system, and the leverage of using Medicare-specific policies to achieve Medicare cost-containment objectives may be limited.

Third, reimbursement policy by Medicare and other third-party payers has contributed to the rapid adoption and often excessive use of medical technology. Therefore, policymakers have looked to changes in reimbursement policies to alter the financial incentives for providers and consumers to use medical technology. **However, reimbursement is only one of several factors that contribute to the tendency to adopt and use medical technology.** Other factors include public demand for sophisticated technologies, the desire of physicians to do as much as possible for their patients, competition among hospitals to achieve quality and prestige so as to attract patients and physicians, the fear of malpractice suits, and uncertainties about what constitutes appropriate use.

Fourth, because of spillover effects from one part of Medicare to another, policy mechanisms involving only one part of the Medicare program may have serious limitations in terms of containing Medicare costs or affecting technology adoption and use. Medicare's DRG hospital payment system, for example, excludes physicians' services and outpatient care. These exclusions not only provide incentives for the shifting of costs out of inpatient hospital settings but leave physicians' incentives to use medical technology unaffected. Any cost-containment effort must take into account the fact that physicians play a central role in determining what services are provided to patients in both hospital and other settings.

Fifth, what constitutes rational and appropriate adoption and use of medical technology depends on whether the question is being viewed from a societal perspective, from the perspective of the Medicare program, or from the perspective of individual providers or patients. A rational decision to adopt or use a medical technology is a decision based on the consideration

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of costs and benefits. A decision by hospitals or physicians to adopt a medical technology that improves the quality of care provided to patients may also raise the costs of the Medicare program. From the perspective of the providers or patients, such a decision may be entirely rational. However, the costs and benefits to providers and patients are different from those to the Medicare program. Thus, unless the marginal increase in the benefit of improved patient care justifies the marginal increase in costs to the Medicare program, the decision may not be rational for Medicare. Furthermore, what is rational and appropriate from the standpoint of Medicare is not necessarily rational and appropriate from the standpoint of society as a whole.

Sixth, the social and political climate today is quite different from that in 1965, and now that Medicare's goal of improving access to health care for the Nation's elderly has been largely achieved, the primary focus of policymakers is on containing Medicare costs. The principal intent of the 1965 legislation establishing the Medicare program under Title XVIII of the Social Security Act (Public Law 89-97) was to increase elderly Americans' access to acute care medical services by removing financial barriers, particularly to hospitalization. There was far less concern about the cost of services than about the problem of access. The concern about access was also prominent in 1972, when eligibility was extended by Congress to disabled persons and people with end-stage renal disease (ESRD). More recently, however, the costs of the program have soared, and the pressures for cost containment have increased. Thus, the challenge that remains for Federal policymakers today is to solve the problem of controlling Medicare costs without diminishing past success.

SCOPE OF THE REPORT

This report examines medical technology's impact on Medicare costs and Medicare's past and future impact on the development and diffusion of medical technology. Medical technology is the major component of medical care. The incentives that govern the provision of medical care services work in the same direction (and are of the same magnitude) as those that govern the adoption and use of medical technology. In this report, therefore, the term "medical technology" is sometimes used synonymously with "medical care" or "medical services."

The bulk of the increases in health and Medicare costs in the past 20 years is attributable to factors other than changes in the patterns and levels of use of medical technology, such as general wage and price inflation and growth in the size of the U.S. population age 65 and over. A detailed examination of these factors, however, is beyond the scope of this report.

The policy options presented in this report emphasize controlling costs by changing the incentives for technology adoption and use, primarily through Medicare's hospital and physician payment mechanisms. The report does not discuss changes in Medicare eligibility or in the broad Medicare benefit package. A serious problem needing attention that this report

does not address is the widening gap between the Medicare beneficiary population's needs and the benefit package actually provided. Medicare's benefit package was modeled after insurance plans of the early part of the century, when acute illness was the primary concern and when most patients either got well or died rather quickly. Some services critical to chronic disease—preventive measures, custodial or long-term care, drugs in outpatient settings, and many rehabilitative services—were excluded from covered benefits. Ironically, as Medicare has achieved its objective of improved access to acute care services and mortality rates among the Nation's elderly have decreased, morbidity from chronic diseases has increased because of the aging of the population. Thus, elderly individuals who cannot afford uncovered services remain an underserved segment of the population.

This report does not consider how much money is appropriate to expend on Medicare beneficiaries. That decision is essentially a political one. As noted earlier, one way to cut Medicare costs, and change the incentives for technology use and adoption, is simply to cut money out of the system. The options presented in this report could be implemented regardless of the political decisions about how much money is appropriate to spend.

SUMMARY

Medicare Policies Affecting Medical Technology

The very existence of Medicare and other third-party payers expands the market for medical technologies and influences the quantity and kinds of medical technologies that are used and the settings in which they are used. Since the enactment of the Medicare program in 1965, a great deal of legislation has been passed with the *purpose* of curbing the escalation in Medicare's costs and controlling the diffusion of medical technology. To date, such efforts have been largely ineffective. Indeed, Medicare's policies concerning eligibility, benefits, and payment have acted to promote technology adoption and use.

Medicare's *eligibility* policy has made more medical technology available to millions of the Nation's aged and disabled people. When the program began in 1966, 19.1 million people aged 65 and over were eligible to enroll. By 1982, the number of Medicare enrollees had increased to 29.5 million. The increase in the size of the Medicare population is due largely to the growth in the size of the elderly population, but some of it reflects the extension of Medicare eligibility to people with disabilities and ESRD on July 1, 1973.

Medicare's *benefit* policy has had a profound effect on the types and location of modern medical technologies. The Medicare law specifies broad categories of benefits for which the program will pay under two parts: Part A, the Hospital Insurance program, and Part B, the Supplementary Medical Insurance program.[4] The law excludes most preventive services and cer-

[4]Part A benefits include inpatient hospital care, post-hospital extended care services, home health services, and as of Apr. 1, 1982, inpatient alcohol detoxification services. Part B benefits include medically necessary physician services, outpatient hospital services, outpatient physical therapy and speech pathology services, home health services for those not eligible for Part A, and various other limited ambulatory services and supplies (e.g., prosthetic devices and durable medical equipment).

tain other services, such as custodial and long-term care. Medicare's benefit package has undergone few major changes since the program's beginnings.

Although the Medicare program covers a variety of services in a variety of settings, its benefit package is concentrated primarily on acute care technologies provided in institutional settings, particularly those provided as inpatient hospital services. In 1982, 66.3 percent ($34.5 billion) of Medicare's $52.2 billion in payments was for inpatient hospital services. **There are numerous incentives inherent in Medicare's benefit policy to provide too many of some kinds of medical technologies and too few of others.** Coverage of some technologies (e.g., medical devices, drugs), for example, varies according to the characteristics of the technology, of the user, and of the setting in which the technology is used. In some cases, as in treatment for alcoholism, Medicare's benefit policy has encouraged the development of a technology in an inpatient setting, despite the fact that treatment in other settings may be as effective and is certainly less costly. Medicare's exclusion of benefits for some technologies, including assistive communications devices, has had an unfavorable influence on their development and diffusion.

A dramatic specific example of how Medicare's eligibility and benefit policies have affected the development and diffusion of costly medical technologies is provided in the case of technologies used to treat ESRD. People with ESRD require some form of dialysis or kidney transplantation to prolong their lives. In 1972, before Medicare eligibility was extended to persons with ESRD, about 10,000 persons were receiving hemodialysis. By 1980, following the extension of eligibility, 50,000 were being dialyzed. There was also a significant increase in kidney transplantation following implementation of the ESRD program. Currently, an estimated 93 percent of the U.S. population with ESRD are Medicare beneficiaries. Thus, Medicare policies can be clearly identified as a major influence on the diffusion of the technologies used in the treatment of ESRD.

Medicare's payment policies have had the most profound effect on medical technology adoption and use of any of the program's policies. For many years, Medicare has paid hospitals and other institutional providers on the basis of reasonable cost and paid physicians and other noninstitutional providers reasonable charges on a fee-for-service basis. Under both payment methods, providers receive more reimbursement when they use more medical technology. Thus, these payment methods offer little deterrent to the increased use of technology by providers and little incentive for providers to choose less costly technology.

Although Medicare's hospital payment system is now in the process of change,[5] 17 years of cost-based hospital payment have shaped the health care system today. The original Medicare legislation left the specific method

[5]Medicare's hospital payment method was changed by the Social Security Amendments of 1983 (Public Law 98-21), which mandated the phasing in beginning in October 1983 of a prospective per case inpatient hospital payment system based on Diagnosis Related Groups (DRGs). The implications of DRG hospital payment are discussed in a following section.

Photo credit: National Kidney Foundation, Washington, D.C.

Medicare policies are a major influence on the development and diffusion of hemodialysis and other technologies used in the treatment of ESRD

of determining reasonable cost to administrative decisions. The method adopted was very liberal in allowing hospitals considerable discretion in calculating the costs attributable to Medicare. Thus, because hospitals have been assured of reimbursement by Medicare and by other third-party payers, they have had no financial reason not to spend money on medical technology, especially on socially valued technology.

Medicare's method of paying physicians has changed little since Medicare was enacted, although minor restraints have been imposed on the rate of increase of physicians' payment levels. Most physicians' incomes are determined by the number and intensity of services delivered and the fee received for each service. The use of technology by fee-for-service physicians is sensitive to the additional revenue they receive.

In addition, although not intrinsic to the fee-for-service payment method, physician payment levels that Medicare has established for complex and expensive medical technologies are usually disproportionately high. In most instances, the reimbursable charge for a technology was established at an early point in the technology's history. Although subsequent technological advances and higher rates of utilization may have substantially reduced the time, judgment, skill, and cost required to use the technology, this change is not reflected in the physician's fee or Medicare's reimbursement level. Furthermore, the existing payment system provides incentives for the use of "technology-intensive" medical care. Under current fees, what are sometimes referred to as "technology-oriented" services, such as diagnostic tests and surgical procedures, are valued higher than "cognitive" services, such as taking medical histories and counseling.

Medicare's *beneficiary cost-sharing* provisions were the only measures specifically included in the original legislation to help moderate the unnecessary utilization of services. Although there is little empirical evidence concerning the effect of deductibles, copayments, and coinsurance on the use of medical technology specifically in the Medicare program, it is generally believed that such cost-sharing has had little impact on technology use. Supplementary health insurance ("Medigap") is used extensively by Medicare beneficiaries, and it often substantially diminishes or eliminates the burden of these cost-sharing requirements. Premium payments, another form of cost-sharing, are clearly not an obstacle to the use of services.

The Impact of Medical Technology on Medicare Costs

Changes in the kinds of medical technologies available and changes in the patterns of use of technologies already available continually influence health care costs—at times moderating cost increases and at times exacerbating them. How medical technology contributes to health and Medicare costs is a question that can be addressed either in the aggregate or with respect to particular technologies or classes of technologies.

The question from the aggregate perspective is whether changes in medical technology use as a whole have raised or reduced health care or Medicare costs and, if so, by how much. The aggregate perspective is useful, because it puts technology's relationship to costs into a policy perspective.

The most widely used approach to estimating technology's aggregate contribution to health care costs is to separate the change in total expenditures for health care into its component parts: population or enrollment changes, overall wage and price inflation, wage and price inflation in medical care in excess of general inflation, and changes in service intensity.[6] Changes in technology use are included in the latter two measures, although these measures also reflect other factors.

Using this general approach, OTA estimates that **increases in service intensity (labor and nonlabor inputs) per capita accounted for 24 percent of the 93-percent increase in per capita hospital costs from 1977 to 1982.** The increase in service intensity is due in part to an increase in the hospital admission rate (a 5-year increase of 2.1 percent), but the overwhelming part of the increase is due to the provision of a greater quantity of services per hospital admission. Moreover, OTA's empirical and literature analysis supports the general conclusion that **changes in service intensity have contributed substantially to the growth in hospital costs over the past 20 years.**

Increasing intensity of care appears to be a less important source of expenditure inflation in total personal health care expenditures in the United States than it is for the hospital sector alone. **The combined effect of increasing intensity of care and increasing health care prices in excess of the Consumer Price Index accounts for only about 16 percent of the growth in per capita personal health care expenditures between 1977 and 1982. During that 5-year period, however, these two technology-related components of cost together increased real per capita personal health expenditures at an average annual rate of 2.8 percent.**

It is possible to account for the components of Medicare cost increases, but the interpretation of the estimates is even more clouded than is the interpretation of increases in general health care costs. Changes in program eligibility or in covered benefits can lead to dramatic changes in measured service intensity that have little to do with changes in medical technology but instead represent a shift in the burden to payment for services already available and used. Changes in per capita service intensity do indicate how much more or less Medicare is paying for now than at some earlier date. Between 1977 and 1982, Medicare expenditures per enrollee increased 107 percent. OTA's analysis indicates that **nearly 30 percent of the increase in Medicare costs per enrollee from 1977 to 1982 can be attributed to increased use of covered services (25 percent) and increased medical prices in excess of general inflation (3 percent).**[7]

Although none of the approaches to measuring technology's aggregate contribution to health care or Medicare costs is entirely satisfactory, **taken as a whole, the available evidence leads to the conclusion that health care costs have increased in part because more is being done for patients today**

[6]"Service intensity" refers to the quantity of inputs that go into producing a given unit of health care. These inputs include labor, supplies, materials, and equipment used in the provision of care. Service intensity is associated with, but not *identical* to, medical technology use.

[7]The percent due to medical price inflation may be overstated, and the service intensity percentage correspondingly understated, because the amount Medicare actually pays for services (i.e., the effective price) probably lies somewhat below stated prices.

than ever before. More and better trained personnel, more procedures, more drugs, and more and higher priced equipment, materials, and supplies are being used in the delivery of health care to Medicare patients and to the population as a whole. So far, the trend toward "more" does not appear to be abating. It is not just at the margin, however, that there is an opportunity to reduce Medicare costs. **There are many opportunities to save health and Medicare costs by altering longstanding patterns of use of medical technology.**

Furthermore, the aggregate approach to estimating medical technology's contribution to health care or Medicare costs is limited, because it ignores the patient benefits associated with cost increases or decreases, it does not take into account the underlying reasons for changes in medical decisions or practices, and it does not show that cost-saving and cost-raising changes in technology are not scattered evenly across illnesses. **Summary statements about technology's net influence on health care or Medicare costs mask the rich assortment of ways in which changes in medical technology shape the health care system, the population's health status, and its cost.**

Thus, in order to provide insight into the underlying reasons for change in medical decisions or practices and to highlight the extent to which the costs of the Medicare program are altered by new technologies, OTA examined seven specific technologies first introduced in the 1960's or 1970's: coronary artery bypass surgery, the drug cimetidine, therapeutic apheresis, pneumococcal vaccine, intensive care units, total parenteral nutrition therapy, and kidney dialysis.

All seven of these technologies have clear patient benefits—in some cases, they are life saving—but for all of the technologies, there is controversy about the most appropriate indications for use. Two of the technologies have been or may be cost saving to Medicare, but five of them have raised or have the potential to raise Medicare costs, in some cases significantly. Above all else, these technologies illustrate how exposed the Medicare program is to changes in medical technology that are largely beyond its control. The challenge to Medicare in the face of new technologies that offer both patient benefits and higher costs is how to encourage the most cost-effective use of the most cost-effective technologies. The overall remaining issue is how Medicare policy can be structured to bring about more cost-effective use of both existing and new medical technologies.

Overview of Areas for Change in Medicare

OTA's discussion of potential areas for change under Medicare is organized in two parts, corresponding to the two types of policy mechanisms discussed previously. The first part—policies directed at individual technologies—explores linking Medicare's coverage policy and technology assessment to contain costs. The second part—policies providing broad incentives to encourage appropriate adoption and use of technologies—is divided into three sections: hospital payment, physician payment, and alternative or systemwide approaches to changing incentives.

Specific Technologies: Linking Coverage Policy and Technology Assessment To Contain Costs

A potential method of containing Medicare costs is by influencing the diffusion (i.e., adoption and use) of medical technologies. It is generally agreed that Medicare's coverage policy—policy that governs the eligibility of services (technologies) for payment—has influenced decisions about the purchase of some expensive, visible medical technologies. The relationship between coverage policy and adoption of other kinds of technologies or *use* of any technologies remains speculative.

Although Medicare and other insurance plans designate broad categories of services, such as inpatient services, as being covered, or eligible, for payment, specific technologies, with few exceptions, require individual coverage decisions. Medicare coverage policy for particular technologies not mandated or excluded by law has been decided on a case-by-case basis according to Section 1862 of Title XVIII of the Social Security Act. Section 1862 prohibits Medicare payment for items and services that are "not reasonable and necessary for the diagnosis or treatment of illness or injury or to improve the functioning of a malformed body member."

Medicare has refrained from establishing a definitive interpretation of "reasonable and necessary" and has relied on a loosely structured and decentralized mechanism to determine whether a technology is covered. The criteria used to determine if a technology meets the broad statutory language of "reasonable and necessary" are: 1) general acceptance as safe and effective, 2) not experimental, 3) medically necessary, and 4) provided according to accepted standards of medical practice in an appropriate setting. Traditionally, coverage policy has been made in light of Medicare's principles of not interfering with the practice of medicine and assuring beneficiaries a free choice of providers.

Some coverage decisions are made at the national level by the central Health Care Financing Administration (HCFA) office, while others are made by regional HCFA offices. Most of the decisions, however, are made by Medicare contractors, called intermediaries and carriers, who perform the Medicare program's claims processing and payment function at the local level under the policy and operational guidance of HCFA. Although the details vary, the coverage process is the same at the national level or at the contractor level. First, new technologies and new uses of covered technologies are identified. Second, a decision is made about covering the identified technology for Medicare payment. The decisionmakers (contractors or HCFA) may receive advice, which usually involves an evaluation of the safety and effectiveness of the technology. The final step, implemention of the coverage decision, is the responsibility of Medicare contractors.

Because of the general language of Section 1862 and the absence of regulations or guidelines that implement the section, Government officials and Medicare contractors have had considerable latitude in determining which technologies are to be covered for reimbursement. Contractors vary widely in their identification of uncovered technologies, their decisions about the coverage of specific technologies, and their implementation of national

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coverage decisions. As a result, some technologies may be covered and paid for in one area and not in another. There is no national or local listing of procedures that are not covered.

Problems pertaining to the administration of the coverage process that need attention include: 1) the inadequate identification of emerging and outmoded technologies for coverage decisions; 2) the lack of uniformity in implementing national coverage decisions; 3) the timelag involved in the coverage process, including technology assessment; 4) the complex coding system and proliferation of codes; and 5) the incomplete dissemination of information. These problems all potentially raise Medicare's costs, although some of them (e.g., numbers 2, 3, and 5) may actually decrease Medicare expenditures.

Of particular interest to cost-containment efforts is Medicare's policy of not explicitly considering cost or cost-effectiveness information in making coverage decisions. Also of interest is the fact that Medicare has refrained from a policy of limiting coverage of particular technologies to restricted circumstances (e.g., institutions offering specific services or having specialized equipment) and to physicians with specific skills. Although the notion of limiting coverage to selected sites and providers has gained importance with the increasing development of sophisticated technologies that require particular expertise, Medicare's principles of refraining from interfering with medical practice and assuring beneficiaries a free choice of providers appear to have limited its application. On the other hand, Medicare does limit coverage of some technologies to appropriate medical conditions. For example, therapeutic apheresis is currently covered for six disease indications.

In theory, one way to use coverage policy to assist in containing Medicare costs would be to include cost criteria in technology assessments. Cost-benefit analysis (CBA) and cost-effectiveness analysis (CEA) are formal analytical techniques for comparing the positive and negative consequences of alternative ways of allocating resources. The methodological strengths and weaknesses of CBA/CEA and the potential for expanding their use in coverage decisions was discussed in OTA's 1980 report *The Implications of Cost-Effectiveness Analysis of Medical Technology*. A methodological issue of particular importance to beneficiaries of the Medicare program is whether to include discounted future medical care costs (due to longer lifespans for patients resulting from the use of medical technology) as a direct cost of a technology.

Incorporating cost criteria into an assessment, however, would not necessarily lead to the identification of cost-saving technology. Achieving the objective of identifying technologies that save or raise costs to Medicare before they become established in medical practice is problematic. The technical complexity of determining the cost effects of emerging and new technologies is compounded by the problem of defining a cost-saving or cost-raising technology. Differences in perspective impede arrival at a universal definition of a cost-saving or a cost-raising technology.

A new issue for Medicare is how to coordinate coverage policy with the DRG hospital payment system. Although the coverage process and the proc-

ess of adjusting DRG rates share a similar "approval for payment" function, they differ in that a coverage determination focuses on specific technologies, while adjusting DRG payment rates focuses on the larger entity of a diagnostic group, which includes particular technologies. Moreover, the DRG rate adjustment process must include issues of cost as an integral issue, while the coverage process at present does not consider cost issues. **Nonetheless, the technology assessments performed for the coverage and DRG rate adjustment processes no doubt will have similarities and their coordination should be encouraged.**

Medicare Hospital Payment and Medical Technology

The retrospective, cost-based hospital reimbursement system under which Medicare operated from 1966 until fiscal year 1983 was significantly altered first by the Tax Equity and Fiscal Responsibility Act of 1982 (Public Law 97-248) and then by the Social Security Amendments of 1983 (Public Law 98-21). The latter mandated the phasing in over a 3-year period of a prospective, per case hospital payment system based on DRGs. The new prospective payment system for inpatient operating costs places hospitals at financial risk but also enables them to keep whatever surpluses can be generated.

Although capital, outpatient, and direct teaching expenses remain pass-throughs,[8] Medicare's DRG hospital payment system has radically changed the financial incentives for the adoption and use of specific medical technologies in hospitals.[9] Hospitals now have a financial incentive to increase hospital admissions and decrease lengths of stay. Some patients may be admitted unnecessarily, others may be discharged too early, and some may not get all the elective care in one hospital stay. Thus, hospital admissions and readmissions will need to be monitored.

The DRG payment system also provides hospitals with incentives to reduce the number and cost of ancillary services. Prior to the implementation of DRG payment, hospital administrators had financial reasons to encourage physicians to use available technologies. Now, hospital administrators will need to gain the support and cooperation of their physicians in order to keep their inpatient care within the price range of DRG payments. Under the new system, hospital administrators are likely to discourage physicians from using many high-cost technologies. **In some cases, the substitution of low-cost technologies for high-cost technologies may result in a decline in quality of care. Thus, quality of care remains an important issue under DRG payment.** Congress has provided some control over quality of care by mandating the utilization and quality control peer review organizations (PROs). Hospitals must have signed agreements with these organizations in order to receive Medicare payments. One of the responsibilities of the PROs will be to monitor the potential admission/discharge/readmission problem.

[8]Pass-throughs are those elements of cost that are not part of the prospective payment system.

[9]OTA's technical memorandum entitled *Diagnosis Related Groups (DRGs) and the Medicare Program: Implications for Medical Technology* (Washington, D.C.: U.S. Congress, Office of Technology Assessment, OTA-TM-H-17, July 1983) provides a detailed analysis of these incentives.

Despite the recent establishment of the DRG hospital payment system, it is quite possible that changes in hospital payment by Medicare will be actively considered in the future. Part of the reason is that pressure for cost containment at the Federal level may continue, and part is that individual States may enact hospital cost control systems in which Medicare will agree to participate. Alternative approaches that have been suggested or applied by public or private payers and that might be considered for implementation by Medicare generally fall into four major categories:

- alternative hospital prospective payment methods or modifications of Medicare's DRG hospital payment system,
- changes in capital payment methods,
- limited provider contracts, and
- increased patient cost-sharing for hospital services.

Congress has adopted DRGs for the Medicare hospital payment system, but improvements of DRGs and of the payment system should be pursued. Case-mix classification systems with more desirable properties than DRGs may become available in the future. **Innovations in medical devices, drugs, and medical techniques that raise the quality of care for the Medicare population but also increase hospital per case costs may not be readily adopted unless DRG payment rates are updated.** Refinements of Medicare's DRG-based hospital payment system are anticipated in light of the series of congressionally mandated studies and the charge to the Prospective Payment Assessment Commission to recommend changes in DRG relative weights and categories. Other approaches to prospective payment of hospitals are certainly possible, and the current Medicare law encourages States to experiment with these as part of all-payer systems. Innovative prospective payment methods such as per capita hospital payment and areawide global budgeting may hold promise in some areas.

How Medicare will pay for hospitals' investments in capital plant and equipment under DRG payment is an issue that has yet to be resolved. Traditionally, Medicare has reimbursed hospitals for interest and historical cost depreciation expenses associated with all capital equipment. This payment method has increased hospitals' demand for capital but has also made it difficult and costly for some hospitals to obtain additional debt financing. Currently, under DRG payment, capital costs are treated as pass-throughs (i.e., reimbursed, as they always have been, as they are incurred with no limit on the amount that a hospital can be paid). **Of particular concern with a capital cost pass-through under DRG payment is the incentive for hospitals to adopt expensive capital equipment that reduces operating costs but raises total costs per case.** Congress has recognized that capital costs are still a problem for Medicare, and Public Law 98-21 requires the Department of Health and Human Services (DHHS) to study how capital costs should be paid in connection with the DRG hospital payment system.

Two possible alternatives to the pass-through are to incorporate a flat rate for hospital capital into the DRG rates and to build hospital-specific capital allowances into the DRG system. Although the flat rate approach is generally more efficient than pass-through capital payment, it does raise

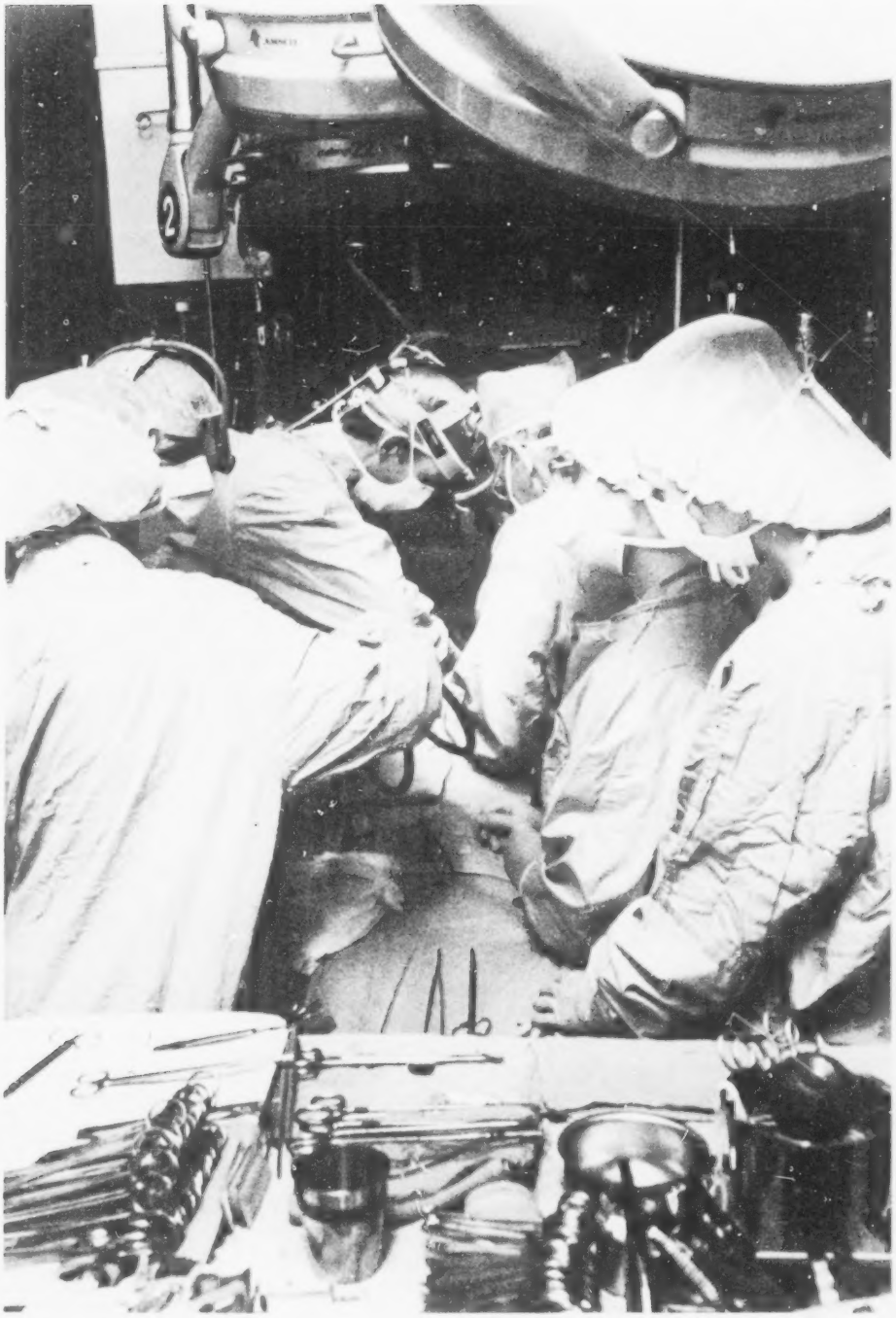

Photo credit: University of Utah Medical Center

Updating DRG hospital payment rates will be necessary to encourage the adoption of technologies that raise the quality of care provided but also raise hospital per case costs

questions of fairness among hospitals and equity of access to medical technologies among patients. In a flat rate payment system, hospitals that in the past had lower ratios of capital to operating costs would receive more payment than they had in the past. The hospital-specific approach would tend to reward those hospitals that were most highly capitalized in the past, leaving those with less capital forever to receive lower payments.

Two additional approaches to affecting the use of medical technologies through hospital payment are limited provider contracting and increased beneficiary cost-sharing for hospital services. Both methods have significant limitations. Limited provider contracts for hospital care[10] would involve selecting certain hospitals for the provision of inpatient care to Medicare beneficiaries. Overall, although contracting may save program dollars, it represents an abandonment of the principle of assuring beneficiaries freedom of choice of providers on which Medicare was built and forces subsidies of hospital care from other payers.

Medicare Physician Payment and Medical Technology

Any cost-containment effort must take into account the fact that physicians are key decisionmakers with respect to the use of medical technologies. Physicians determine the amount of medical services to be provided, when patients need hospitalization, and when they need other types of care.

There is substantial evidence to suggest that inappropriate use of medical technologies is common and raises costs without improving quality of care. Such excessive use exists within the norms of medical practice and across the spectrum of technologies available to physicians. Physicians' habitual behavior can cause excessive use of medical services. Until recently, medical education trained physicians to do all they could for their patients' well-being without concern for the cost. In response to restraints in their payment, physicians have changed the number and mix of services they provide. The practice of defensive medicine in response to fears of lawsuits may also increase unnecessary use, and thus cost, of medical technologies.

Physician behavior with regard to the use of medical technologies may be modified by financial incentives, educational programs, utilization review programs, and other programs such as second surgical opinion programs. Studies show that the results of different programs and interventions vary both in effectiveness and longevity.

Changes in physician payment methods can also influence physicians' incentives for the use of medical technologies. Physicians who are paid on a fee-for-service basis have financial incentives to see more patients more often and provide more technologies. Physicians (or practice plans in which they participate) paid on a per capita basis have financial incentives to increase the number of their patients but to keep the number of patient visits

[10]Currently, State Medicaid agencies may apply for waivers from the freedom-of-choice provision of the Social Security Act. Most waivers to date have been for case management systems that restrict the providers from whom a Medicaid beneficiary can obtain primary care, although California has adopted an approach of contracting with hospitals for inpatient care for Medicaid beneficiaries.

low (or nonexistent) and to use particularly low-cost technologies. The financial incentives under a fee schedule system depend on the particular type of schedule adopted. Under fee schedules based on patient visits, physicians have incentives to schedule more visits but disincentives to use a large number of technologies (particularly those whose costs are high in relation to the fee per visit received). Under fee schedules based on episodes of illness, physicians have incentives to treat for more episodes but to keep patient visits for each episode and the use of costly technologies at a minimum.

Most changes in Medicare physician payment methods would necessitate a reformulation of the diagnostic and procedural codes for physician services that are currently used by the program. The present coding system makes it fairly easy for physicians to adopt and use medical technologies. Furthermore, the large number of procedural codes makes it fairly easy for physicians to bill for expensive services and to make expensive coding errors.

Changes in Medicare's physician payment methods that could help contain costs for the Medicare program by influencing the adoption and use of medical technologies are of two general types. One is requiring patients to assume more responsibility for their health care costs, either through increases in beneficiary cost-sharing or a reduction in the types of benefits Medicare covers. It should be noted, however, that elderly beneficiaries already have greater out-of-pocket expenses than the younger population, and increased cost-sharing may reduce their access to health care. The second type of change involves imposing restraints on the amount or changing the methods of Medicare payment to physicians (e.g., by fee schedules or freezes on current fee levels). Either approach could result in cost savings for the Medicare program, but each would have different effects on the adoption and use of medical technologies and on access to medical care by Medicare beneficiaries. Changing Medicare's claim-by-claim voluntary physician assignment policy[11] would strengthen the implementation of the other changes, although it might discourage some physicians from treating Medicare patients.

Alternative Approaches to Changing Incentives for Medical Technology Adoption and Use

Alternative approaches that could be used by Medicare to foster the appropriate adoption and use of medical technologies, and ultimately save costs, include two general policy mechanisms: 1) methods to foster competitive behavior by providers, and 2) administrative changes in Medicare. These mechanisms include changes involving the general health care system that Medicare could embrace and changes in the structure of the Medicare program itself.

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[11]Medicare permits physicians the option of being paid directly by Medicare, called "accepting assignment," or being paid directly by the patient. If a physician does not accept assignment, the Medicare reasonable charge, which is paid directly to the patient, may be less than the physician's actual charge, and the patient is responsible for the difference between the two.

It is generally believed that increases in the costs of the Medicare program and of the overall health care system can be contained by the rational adoption and use of medical technologies, which includes using technologies in appropriate settings. An important method of stimulating such adoption and use is to foster competitive behavior by providers. In most cases, it is through policies encouraging the use of alternative sites and organizations for health care delivery that competitive behavior is expected to occur. Alternatives to fee-for-service, solo physician office practices and traditional inpatient hospital settings include site alternatives, such as freestanding ambulatory surgery centers, emergency care centers, hospices, hospital outpatient departments, home health care, and nursing homes; and organizational alternatives, such as health maintenance organizations, the use of primary care gatekeepers, and preferred provider organizations.

Long-range cost containment in the Medicare program is constrained by the kinds of health care delivery systems available and the limited influence that Medicare financing can have on the settings of care and kinds of technologies provided. In recent years, the Medicare program has granted exceptions to specific alternative sites of care (e.g., freestanding ambulatory surgery centers) and encouraged the demonstration and evaluation of alternative organizations for health care delivery (e.g., preferred provider organizations). Thus, Medicare's efforts in developing competition with the types of care predominantly available have been to identify and encourage other

Photo credit: National Institutes of Health

Home health care as a substitute for an extended hospital stay may be underutilized

types of provider practices and modes of delivery. In the long run, it is hoped, alternatives of these types will lead to cost-effective health care.

A complementary approach to increasing competition among providers involves moving from the current Medicare program structure to making available other types of health insurance coverage to beneficiaries. The most discussed possibility is the use of vouchers, wherein Medicare beneficiaries would receive a specified amount of money to purchase health insurance from the marketplace instead of participating in the traditional Medicare program. Important decisions regarding competition for policymakers in the Medicare program are: 1) the relative emphases to be placed on the insurance versus the alternative delivery systems approach, and 2) the pace of adopting the various competitive approaches into Medicare. To increase the capability of Medicare to embrace competitive approaches, the program could undergo an administrative change—merging Parts A and B. Merging the two parts could alleviate the financial problems of the Medicare program and improve the quality of care for patients.

POLICY OPTIONS

Rather than to recommend specific actions, OTA's policy is to provide Congress with a series of alternative actions and discussions of the possible consequences of implementing them. The policy options in this report are organized by four issue areas.

ISSUE:

How can the Medicare coverage process for specific technologies be improved?

Option 1: Amend the Medicare law to allow coverage for emerging technologies on an interim basis in exchange for data on their safety, efficacy, and costs.

Although interim coverage of emerging technologies in exchange for data would initially increase Medicare's costs, the information gained would probably be worth the investment. Better data on the safety, efficacy, and especially costs of new technologies would enable Medicare policymakers to make more rational decisions about expanding Medicare benefits.

Important decisions would have to be made about how long to provide coverage and where and to whom the interim coverage would apply. Sites and providers to conduct clinical trials could be selected as part of the research peer review process.

Option 2: Amend the Medicare law to limit coverage of complex technologies to their provision in selected sites by selected providers.

Certain medical technologies involve highly complex equipment and supplies and require a skilled team of providers. Limiting Medicare coverage for these technologies to their provision in particular sites could help control Medicare costs and might also improve quality of care.

The specification of providers and sites for certain technologies might be regarded as unequal treatment of providers. Sites and providers could be selected on a peer reviewed basis to assure quality and to maintain acceptability within the medical profession. Limiting sites and providers might limit the numbers of patients who could be treated. If need exceeded capacity, a method for rationing care would be necessary.

Option 3: Mandate that Medicare coverage decisions include cost considerations when appropriate.

At present, the adoption and use of medical technologies involves *implicit* rationing of scarce dollars. To help contain Medicare costs, it may be necessary to explicitly include cost considerations in coverage decisions. Especially if Medicare covers high-cost technologies that yield few benefits, other services must be eliminated in order to decrease program expenditures.

Congress provided little guidance on how it intended the statutory "reasonable and necessary" tests to be applied. DHHS has asked its legal counsel to investigate the definition of "reasonable and necessary" in the Medicare law to see if costs may be considered. No clear decision has yet been provided.

Option 4: Conduct oversight hearings to improve the coverage process.

Administrative problems pertaining to the Medicare coverage process that need attention include: 1) the inadequate identification of emerging and outmoded technologies for coverage decisions; 2) the lack of uniformity in the implementation of coverage decisions; 3) the timelag involved in the coverage process, including technology assessment; 4) the complex coding system; and 5) the incomplete dissemination of information. Oversight hearings could be used by Congress to focus the attention of DHHS on these problems.

ISSUE:

How can Medicare's hospital payment system incorporate appropriate incentives for generating effective and efficient adoption and use of medical technology?

Option 5: Encourage DHHS to support further refinement and development of case-mix measures other than DRGs.[12]

Congress has recognized the need to refine Medicare's DRG-based inpatient hospital payment system by mandating several studies. Even with refinements, however, a DRG-based system may not be optimal, and case-mix measures that account for resource use more accurately than DRGs might be found. Examples of potential alternatives to DRGs are Disease Staging, the Severity-of-Illness Index, and Patient Management Categories. Development of alternatives to DRGs will require continued interest and additional funding from DHHS.

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[12]The background information on this option was discussed in detail in the OTA technical memorandum entitled *Diagnosis Related Groups (DRGs) and the Medicare Program: Implications for Medical Technology* (Washington, D.C.: U.S. Congress, Office of Technology Assessment, OTA-TM-H-17, July 1983).

Option 6: Encourage DHHS to develop DRG price adjustment methods that result in higher DRG payment rates for those hospitals that purchase and use certain socially desirable but costly new medical technologies.

Because Medicare's DRG hospital payment system provides financial incentives to hospitals to purchase and use those technologies that reduce costs per case, specific policy might be required to encourage the adoption of socially desirable technologies that raise costs. Making extra payment for a DRG conditional on the adoption and use of a socially desirable but costly new technology would encourage the technology's diffusion. Two possible mechanisms for making adjustments in DRG prices that would be conditional on the adoption of technology are reliance on hospital-initiated appeals of DRG prices and creation of new technology-specific DRGs.

Conditional DRG payment adjustments would work best if limited to a few very high-cost technologies whose introduction would be strongly discouraged in the absence of such an adjustment. The majority of cost-raising technologies probably would be adequately handled through periodic reestimation of the costs of DRGs.

Option 7: Amend the Medicare law to require annual reestimation of the relative costs of DRGs.

Congress has recognized the need for periodic adjustment of DRG rates. The Social Security Amendments of 1983 call for recalibration (i.e., assigning new relative weights to DRGs or establishing new DRGs) at least every 4 years. This option offers a refinement of that mandate and differs from it in two ways: 1) it defines reestimation as recalibration based on the estimation of historical relative costs of technology use; and 2) it suggests adjusting the relative rates every year.

The purpose of annual reestimation of DRG costs would be to keep DRG rates reasonably in line with the cost of efficient and clinically optimal care. Annual reestimation of relative DRG rates would also encourage the rational adoption and appropriate use of medical technologies. Administering annual reestimations would be slightly more expensive for Medicare than reestimation every 4 years. The requirements for data collection would increase administrative costs of hospitals, although many hospitals are likely to use the same data for internal management functions under DRG payment.

Option 8: Amend the Medicare law to strengthen controls over hospital admission rates.

Medicare's DRG hospital payment system provides a strong incentive for hospitals to increase the number of Medicare patients they admit. The following options could help counter that incentive and provide support for the activities of the PRO program.

Option 8a: Amend the Medicare law to require a second deductible for rehospitalization within 60 days of the first admission.

Currently, Medicare beneficiaries do not have to pay a second deductible for rehospitalization within 60 days of the first day of the initial admission. By increasing beneficiary cost-sharing, this option would save Medi-

care program costs. Imposing a second deductible could also save costs by encouraging cost consciousness in physicians. A drawback to the second deductible is that the amount of control patients actually can have in making decisions about hospitalization is questionable. A second deductible might decrease access to inpatient hospital care for some elderly and disabled patients.

Option 8b: Amend the Medicare law to provide a short-term outlier policy for DRG payments.

With a short-term outlier policy, Medicare would not pay a hospital the full DRG rate if a length of stay were less than a particular number of days for each DRG. Such a policy would counteract the incentive under DRG payment for hospitals to admit patients for very short stays instead of treating them more appropriately on an outpatient basis. A potential problem might be that some patients would be kept beyond the outlier threshold length of stay to avoid the short-term outlier payments.

Option 8c: Amend the Medicare law to adjust DRG payments for patient volume changes.

DRG rates are based on the assumption that hospitals' annual volumes are predictable and vary only slightly from year to year. Adjusting DRG payments to hospitals for volume changes could directly balance the financial incentive that DRG payment gives hospitals to admit more and more patients. Unusual increases in the annual number of hospital admissions could trigger a penalty charge against the hospital's total Medicare payment, or each DRG payment could be decreased by a certain amount. While such payment reductions would discourage hospitals from unnecessarily increasing their admissions, the net decrease in a hospital's revenues would be relatively small. However, volume adjustment would undercut the incentives of DRG payment for specialization of services within hospitals.

Option 8d: Amend the Medicare law to establish financial incentives for physicians' decisions about hospital admissions that are consistent with the incentives of DRG payment.

Under DRG hospital payment, physicians will probably be pressured by hospital administrators to discharge patients earlier than they previously have and to readmit patients for elective procedures. Quality assurance and utilization review programs will reinforce physicians' own inclinations to provide adequate care for their patients. The use of financial incentives could mitigate any potentially harmful pressure from hospitals. An example of such an incentive is to pay physicians only half their fees for rehospitalization within 60 days.

Option 9: Amend the Medicare law to control capital expenditures by hospitals by removing capital cost pass-throughs.

The Social Security Amendments of 1983 mandated a DHHS study of alternative methods of handling capital under DRG hospital payment. The following two options are presented as possible alternatives to capital pass-through payment. They are not intended to represent the entire range of methods of handling capital.

If the capital pass-through is continued, capital expenditures could continue to be regulated on a project-by-project basis through certificate-of-need (CON) programs or other agencies. Studies of the effectiveness of CON regulations in containing costs are inconclusive, and the efficiency of a process such as this is questionable.

Option 9a: Incorporate a flat rate for hospital capital into the DRG rates.

A uniform payment approach would treat all hospitals or all those in a class alike, regardless of their level of capital expenditures. A flat rate for capital, whether calculated as a fixed percentage of the DRG price or as a flat rate per bed, would encourage hospitals to provide care at the least possible total cost to the hospital. Since new technologies would be judged in terms of their impact on total costs, not just on operating costs, a flat rate would give hospitals more incentives to be efficient under DRG payment than the current capital cost pass-through system.

It would be difficult to ensure that this type of system would be fair to all hospitals. Hospitals that in the past have had lower ratios of capital to operating cost (e.g., public hospitals) would receive higher payments than before, while those with high ratios would receive lower ones.

Option 9b: Build hospital-specific capital allowances into the DRG system.

To implement this option, hospital-specific cost information would be taken into account to establish a base period level of capital payment, and the payment level would be increased by an index over time. One approach would be to use the hospital's capital costs in a base year and then add a percentage for inflation. Another would be to limit capital payments to a percentage of a hospital's operating costs in each year. Both methods, however, would continue high payments to hospitals with historically high capital or operating costs.

In the early years of implementation, this system would not work well for those hospitals that require major capital expenditures. Thus, it might be advisable to limit this approach to the movable equipment portion of capital, which typically has shorter lifetimes and lower variations in asset values among hospitals.

Option 10: Provide adequate resources or incentives for States to experiment with alternative hospital payment systems, especially those involving all payers.

In States where the only third-party payer using prospective payment is Medicare, hospitals will have incentives at least to shift costs to other payers and at worst to treat patients differently depending on their insurance. Savings to the Medicare program may not offset these other social costs. Furthermore, a Medicare-only hospital payment system may not provide sufficient leverage to lower the annual rate of increase in hospital costs. Additional experimentation with payment systems would yield information about which methods of cost containment save the most money to Medicare and society as a whole. Currently, four States regulate all payers in their hospital prospective payment systems and have Medicare waivers.

The goal of this option would be to encourage the efforts of several State legislatures that are considering alternative hospital payment systems.

Option 11: Consider ways to extend the DRG prospective payment system to payers other than Medicare (e.g., Medicaid) without relying on State waivers.

The desirability of this option depends on the effectiveness of DRG payment in encouraging the appropriate adoption and use of medical technology and in containing Medicare costs. The effectiveness of DRG payment is currently unknown. One problem with extending the current DRG-based hospital payment system beyond the Medicare program is that DRG prices have been based almost exclusively on Medicare data. Comparable Medicaid data bases are not available.

ISSUE:

How can Medicare's physician payment method be used to improve the incentives for appropriate technology adoption and use?

Option 12: Amend the Medicare law to increase beneficiary cost-sharing for Part B services.

Several approaches to increasing beneficiary cost-sharing under Part B of Medicare are possible, including increasing the premium, deductible or coinsurance requirement. While all methods would save Medicare program costs, only large increases in the coinsurance requirement could be expected to significantly affect the demand for medical technologies, in part by a shifting of costs to beneficiaries and in part through some resulting decrease in patient visits. With large increases in the coinsurance requirement, however, some elderly and disabled patients might have to forgo necessary medical care.

Option 13: Discourage Medicare beneficiaries' purchase of private supplemental (Medigap) insurance.

Some observers have suggested taxing Medigap policies to make their purchase less attractive. The rationale for such proposals is that the type of extra first-dollar coverage that Medigap policies provide partially nullifies the intended effects of Medicare's deductible and coinsurance requirements on use of medical services. A principal objection against taxing Medigap insurance is fairness. If this option were adopted, the constitutionality of selective taxation would most likely be challenged.

Option 14: Place further limits on payment to physicians under Part B of Medicare.

Changing Medicare's voluntary physician assignment policy (see Option 15) could strengthen the effect of either of the following two options.

Option 14a: Amend the Medicare law to place a ceiling on current allowable physician fees.

Currently, the Medicare Economic Index limits the rate of physicians' fee increases to the rate of their cost increases. Other types of caps that could be imposed include freezing physician payment levels for a specified period of time or placing percent limitations on the annual rate of allowable fee increases.

Caps on physician payment levels are unlikely to change overall reimbursement to physicians, however, because physicians could respond to such caps by attempting to increase patient visits, increase the number of technologies provided to each patient, and shift to a higher priced mix of technologies. Furthermore, with a cap, fewer physicians would probably accept assignment.

Option 14b: Move to fee schedules for physician payments under Medicare.

Medicare could develop a cost-based fee schedule that relates costs to charges in some rational fashion. However, payment through fee schedules would necessitate a reformulation of the diagnostic and procedural codes for physician services that are currently used by the Medicare program.

One long-range objective in developing fee schedules could be to revise fees in such a way that "technology-oriented" services, such as performing diagnostic tests and surgical procedures, might be valued neutrally with "cognitive" services. Before fee schedules are developed, packages of physician services, possibly designed to complement existing DRGs for hospital care, could be developed.

Option 15: Change Medicare's claim-by-claim voluntary physician assignment policy.

Medicare's current policy of allowing physicians to decide whether or not to accept assignment on a claim-by-claim basis allows costs to be shifted from physicians to Medicare beneficiaries. Although such cost shifting may decrease demand for medical technologies, it may also decrease access to necessary medical care.

One possible of change in assignment policy would be to make assignment mandatory, so that physicians are not paid at all by Medicare if they refuse to accept assignment. An alternative would be for Medicare to pay less for nonassigned than for assigned care. This might spread the burden of cost-sharing more equitably between patients and their physicians and provide significant incentives to both groups to be more conscious of costs.

Option 16: Require review of physicians' services.

Option 16a: Encourage the development of a review program for physicians' services.

DRG hospital payment provides financial incentives to reduce the unnecessary use of ancillary services in hospitals. This option would address the fact that similar incentives to reduce the excessive use of medical services in physicians' offices and other ambulatory care settings are lacking. One problem in identifying excessive use on a procedure-by-procedure and physician-by-physician basis, however, is in differentiating between normal and excessive provision of medical care.

Option 16b: Require or pay for second opinions in elective surgery.

Voluntary second surgical opinion programs have generally had low participation rates, so the potential savings from such programs are not great. On the other hand, there is growing, though not comprehensive, evidence

than mandatory second surgical opinion programs reduce the amount of elective surgery. If a mandatory program were established initially for a few elective surgical procedures, it could be slowly expanded if cost savings resulted.

ISSUE:

What broad approaches, other than those directly involving Medicare's payment mechanism, could be used by Medicare to encourage the appropriate adoption and use of technology?

Option 17: Move toward a capitation payment system for Medicare.

The extent and pace of changing the Medicare program to capitation payment depend both on the capacity of the health care system to provide alternative sites and organizations of the health care system to provide alternative sites and organizations of health care and on Medicare's leverage in promoting or requiring the substantial availability of alternative health care delivery methods.

Although the implementation of mandatory vouchers may not be politically feasible, a voluntary voucher system for Medicare could be implemented without fundamental changes in the basic Medicare program. Under voluntary voucher proposals, the policy is to provide enrollees with incentives to seek more cost-effective care, for example, through health maintenance organizations or preferred provider organizations. If vouchers succeed in stimulating alternative health care systems, then the current Medicare program would slowly move toward a total capitated payment system.

Option 18: Merge Parts A and B of Medicare.

The separation of the Hospital Insurance portion of Medicare (Part A) from the Supplementary Medical Insurance portion (Part B) is inefficient and allows incentives for the inappropriate provision of technologies to persist. Merging Parts A and B could ameliorate the current revenue problems faced by Medicare, reduce providers' efforts to shift costs from one part to the other (usually A to B), and reduce duplication in facilities and equipment. The transition from two separate parts to an integrated system would be complex. Data systems would have to be merged, and intermediaries and carriers would have to negotiate to be single Medicare contractors.

NOTE: Copies of the full report "Medical Technology and Costs of the Medicare Program" can be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, GPO stock No. 052-003-00957-9.

Notes

Assessments in Progress as of July 1984

Technology and the American Economic Transition
Strategic Responses to an Extended Oil Disruption
Potential U.S. Natural Gas Availability
Load Management and Generating Technologies for Electric Utilities in the 1990's
Technologies for Surface Mine Reclamation on Western Federal Lands
Technologies To Reduce U.S. Materials Import Vulnerability
Technology and Structural Unemployment: Retraining Adult Displaced Workers
Cleanup of Uncontrolled Hazardous Waste Sites Under Superfund
Strategic Command, Control, Communications, and Intelligence Systems
International Cooperation and Competitiveness in Civilian Space Activities
Technology Transfer to the Middle East
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Technology, Public Policy, and the Changing Structure of American Agriculture
Evaluation of Agent Orange Protocol
Health and Safety Controls in the Workplace
Federal Policies and the Medical Devices Industry
Status of Biomedical Research and Related Technology for Tropical Diseases
Blood Policy and Technology
Medical Technology and Diagnosis Related Groups: Evaluating Medicare's Prospective Payment System
Technology and Indian Health Care: Effectiveness, Access, and Efficiency
Physicians and Medical Technology: Use, Cost, and Payment Methods
Technology and Aging in America
Alternatives to Animal Use in Testing and Experimentation
Reproductive Hazards in the Workplace
Effects of Information Technology on Financial Services Systems
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Information and Communication Technologies and the Office
Federal Government Information Technology: Administrative Process and Civil Liberties
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Information on the operation of OTA, the nature and status of ongoing assessments, or a list of available publications may be obtained by writing or calling:

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